

ON DIALECTIC

1. In this article dialectic is taken to mean that way of considering the development of thought and reality theorized by Hegel and later reconsidered and discussed by Marx; even today the dialectic concept of reality is an important theme in modern Marxism. As for Marx, some people hold that he turned the Hegelian concept of dialectic back to front, shifting its accent and basis from the Idea to real and concrete man, seen in his social relations; but there is no doubt that, thanks to this reversal, or rather thanks to a varied and complex attitude to dialectic (in some ways more positive and more directly fruitful than the Hegelian logical instrument, in others more polemical and detached), Marx never abandoned his determination to preserve its validity even in a context more or less radically different from Hegel's. Although, within the sphere of modern Marxism, beside the more orthodox school of thought that makes the dialectic concept of reality one of its doctrinal bastions, there is also the school that attempts to limit its doctrine to the field of historical reality and the world of man, relinquishing every pretension to a more generalized metaphysical perspective; one must not forget that even

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the latter does not believe it possible to form an adequate concept of the development of history without any reference to the dialectic concept; whether the whole of reality or only history are considered, it does not seem possible to leave the dialectic theory of development out of a consideration of either point of view.

It is necessary to indicate, however briefly, the essential lines of that way of understanding development (of reality and history) called dialectic. It was suggested to Hegel by the need to understand the whole of reality, in its multiple manifestations, from a unitarian point of view. In Hegel's thought predominant importance is given to a view of total reality that includes everything without excluding anything, that overcomes every limit and every separation, every contraposition and every division.

Hegel considers the viewpoint of reason to be a view of the whole, of totality, as opposed to the perspective of intellect that is limited to the finite and its contrapositions, to multiplicity and its exclusions. This totality is not static, but dynamic and capable of evolution; its moments are not co-existent however, but bear relationships of conditioning and development one towards another. Totality is therefore symbolized by a process in which all the aspects of its multiplicity are unified by movement of evolution that places each aspect in an exact position in the total sequence and at the same time in a precise relationship with each of the remaining moments. The movement requires that the process does not stop in any of its moments; now Hegel justifies the passage from each moment to the next by a relation of negation; this is such that each moment cannot assert itself without a tendency not to remain fixed within its own limits but to overstep itself and therefore to negate itself. In as much as each moment is asserted and its limits defined, by virtue of the principle behind the totality on which it rests, it tends to overstep its own limits, and prevent itself from becoming an absolute; the new moment born of this tension may be considered as the negation of the preceding moment; but one cannot have a negation merely at the cost of a given moment and to the benefit of the ensuing moment; the new moment also contains the self same negative tension and this in turn must hatch out a new moment; now if the relation of the second moment to the first is negation of the first, obviously the third moment bears an analogous relation of negation to the second and a relation of

negation of the negation to the first moment. The element of self-negation prevents each moment from becoming the terminal point of the process and enables the process to progress; at the same time it allows each moment to assert itself, exactly when it supersedes another moment; the totality of the moments are thus able to assert themselves, without the process ever having to terminate in any of these; evolution is continuous and complete. In order to complete the picture of dialectic movement it is necessary to describe another characteristic: each moment negates the preceding moment and also preserves its positive aspects. Thus it is possible to discover the positive elements it brings to its conclusions and the negative elements implicit in the absence of other conclusions or rather by their exclusion; the passage from one moment to the next means not only that the negative aspect of the former is rejected, that is to say conclusions other than those it asserts are implicitly excluded (and this occurs in fact with the affirmation of new conclusions), but also that its positive aspects be preserved, that is all the conclusions that go to make it up. If the evolution between the various moments involved their reciprocal exclusion, it would be difficult to achieve a unitarian process for the multiple moments; if however the ensuing moment preserves all that was positive in the preceding moment, and at the same time negates what was negative, the unity of the process and the continuity of the evolution are more surely preserved. The basic characteristics of the essential aspects of dialectic and the movement it inspires are totality, development, negation and affirmation. The importance of the Hegelian doctrine of dialectic is epitomized by the importance it attributes to four fundamental instances that may be summarized as follows: the instance of comprehending the totality of moments and not this one or that one considered in isolation; the instance of conceiving this totality as the result of evolution and not pre-established as a premise; the instance of considering the relation between the various moments of this evolution that explains the tendency of each of these to replace and negate another; and lastly the instance that something substantial in each moment remains, even though it is negated, in the ensuing moment, assuring that no moment disappears completely or comes into being in vain. The resulting vision holds not only that the authentic rational perspective is of total

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reality and the result of an evolutionary process, but it also asserts that even in the evolutionary process opposition, contrast, negation are of great importance, as is also the idea that each opposition and negation preserves and improves on the essential elements of that which it opposes or wishes to negate. All the aspects of the dialectic process have the character of necessity, as they are not only the result of empirical observation, but cannot be otherwise and lend the whole movement the character of a rigorous scientific process; indeed Hegel sees it as the only, the absolute scientific process, before which all so-called scientific procedures are debased to the role of mere instruments of external and empirical description.

2. If one wishes to examine, even very summarily, the historical formation of the doctrine of dialectic it is possible to discover at least three main sources: a historical matrix, a theologico-metaphysical matrix and the logico-deductive matrix. As for the biological matrix one must recall the connexions of Hegelian thought with both the Neo-Platonist doctrines and the illuministic concept of development; now in both these cases the development of life from father to son, or this same development of life considered in the phases through which it passes in each individual, suggest the general perspective of evolution and its process. In the light of Platonic analyses, Plotinus had already posed three principle conditions for the general process of derivation of reality from the First Principle, those same conditions that Giamblicus will arrange in the fixed steps of a hierarchy: that which endures, that which proceeds and the fact that which proceeds is transformed into that from which is proceeded. Proclus gives the following theory of the general triadic movement of the universe as follows: "Each being who produces out of his own perfection and an overabundance of power, produces beings successive to himself; but each producer remains what he is; and though he remains so, that which comes after him proceeds from him; *the begetter is therefore unchanged and undiminished and by his power to beget he multiplies himself and from himself he produces subsequent existences.*" Therefore the first moment of dialectic movement involves the survival of the begetter; the second moment is a "processing" (πρόδος), that

is achieved “by the resemblance of things to the former ones”; in fact “the product persists in the producer in so far as he contains something identical to the producer, while he proceeds from the producer in as much as he has something different from the producer.” The product is therefore both identical and different from the producer, or rather it “persists and proceeds” both at once; lastly “each being proceeding in essence from something, returns to that from which it proceeds.” Plato had dealt principally with considerations of the range of certain concepts and their reciprocal relations; but from this reasoning, more proper to logic, one passes to the Neo-Platonist perspective in which the anthropomorphic components predominate; and one of the models used is in fact that of begetter and begotten, which leads to a process in which the begetter persists, while the begotten proceeds from him and is in part identical to the begetter and in part different from him, and thus “issues” from him. It is enough to recall that genealogy was used, in the mythology of the origins of the Greeks, as a model to explain the world, and that when Christian thought was taking shape the principle of generation was used to explain the inner life of divinity. Connected to the biological matrix is the circular concept of the process, present in Neo-Platonist thought; indeed the *return* of every being to that from which he proceeds is explained by Proclus as the very essence of the process: “every being desires good and this is achieved through its nearest cause; in fact the way by which each being achieves existence, he also achieves good.” The begetter, therefore, as the cause of the begotten is also the model of its movement and the point to which its desire turns and the point at which its conversion is accomplished. In this way “all beings proceed in a circle from cause to cause”; and all the begotten tend to achieve the perfection present in the model that begot them. There is no doubt that the application of the biological model to the field of theology conferred on it great authority and contributed to the obliteration of its anthropomorphic origins. With a better sense of its limitations the model of the evolution of an individual’s life was used by the culture of the illuminists; the illuminists managed, as in the case of Condillac, to blend the biological model of evolution with the tautological process of mathematical calculation, thus conferring on the former greater cognitive dignity and greater concrete consistency

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on the latter. At the root of the biological model however lies the great importance attributed by man to generation and to the relations of both negation and continuity it establishes between father and son; on one hand the son pushes the father to one side, and takes his place in the sequence of life; on the other, the son is the continuation of the father, preserves his character and his heredity.

However it was the theologico-metaphysical matrix that encouraged philosophical thought to extend the field of validity of the biological model to its maximum. Not only, as we have already observed, the fact that the biological model was used to explain the life of divinity itself conferred on it a value both universal and absolute; but even when philosophical reflection, as in the case of Hegel, did not use a theological perspective to explain reality, it did not hesitate to preserve the original model in its metaphysical function. It is well-known how Hegel used the motif of the process both in ordering the sphere of concepts and also in the delineation of an evolutionary and unitarian perspective of history, in all its manifestations particularly the essential moments in the life of the absolute spirit: art, religion, philosophy. What is more, this same life of the spirit is seen and explained, at different levels, in the light of the same genetical-evolutionary criterion. Indeed there is no sphere, whether of reality or culture, in which Hegel did not use the concept or the schema of the process; it is not that this is developed, at the various levels, with identical characteristics; thus, for example, within the field of natural reality the process is less transparent in its logical meaning; but the same structure of the process works identically within any form of reality, from the first initial spurt of logic to the highest manifestations of the spirit: philosophical thought. The metaphysical weight of the structure of the process may best be observed in the use Hegel makes of it for the ordering and explaining of the world of fact (whether natural or historical); it is true that a marginal quantity of these facts escape any form of dialectic classification, this is the halo of *accidentality* from which the Hegelian system never quite escapes and which is left to mere empiricism. But, as a whole, significant facts are within the scope of the dialectic movement; indeed they are only significant in that they come within this scope. Thus their empiricism is an-

nulled; they are like the links of a necessary structure and can be explained in all their breadth. The sequence of natural facts that ensues has the structure of the perfectly conscious work of divine creation; and the sequence of historical facts are ordered as if arranged by direct decree and motivated by the same divinity. In this sense one may argue that Hegelian philosophy preserves a theological character although Hegelian Reason denies any form of religious transcendence; it is not to be identified with the reason of a mere man; and its universality, its capacity to develop total reality, it is better compared to divine reason. In order to be convinced that, by using its metaphysical amplification, Hegel preserved the original biological model at the root of his thought, it is enough to observe the way in which he describes the movement of the Idea from the moment in which the Idea is contained within itself, to that in which it is born and finally that in which it achieves independent existence; in order to clarify the meaning of this general perspective Hegel even uses the theological movement of divinity, following Christian thought, in which the relations of paternity and progeny are codified, as well as the same relation that ties father and son. Besides it is well known that in Hegel's view paternity, taken in its more human and even biological dimensions, acquires greater dignity when it develops an objective spirit and in the context of social life.

Even the parallel between the way in which the biologicofinalistic model is developed in Aristotelian doctrine and the meaning this has taken on in Hegelian philosophy may help to shed light both on Hegel's faithful adherence to this explicative schema, and its amplification by his adding to it a metaphysical perspective. It is well-known that Aristotle thought he could adequately explain the phenomena of life by falling back on the action of an inner purpose operating in matter, which provides it with a development and adequately orders its various moments; because of this final purpose or inner energy, no single moment of the development is conclusive; at the same time this purpose allows each moment to take the place of the preceding one and to preserve what has already been achieved, so that it increases until it reaches ultimate perfection; and this process recurs cyclically to accomplish that act from which the potential develop-

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ment of new life has drawn its origin. This doctrine of power as the capacity to develop a given act in the form of a process, was used by Aristotle to explain the phenomenon of generation and of the consequent development of an individual. Hegel makes frequent use of this theory, as he does of the model of biological succession in its roughest form and with reference to the simple father-son relation; moreover the Aristotelian theory allows him to add to his perspective the cyclical characteristics of development and consequently the existence from the very beginning of that *telos* which is also its principle component. Thus the rough model and the elaborate theoretical model are merged in a single method of thought. Yet Aristotle did not give his finalistic-biological model such a wide explicative range as did Hegel. Even though Aristotle did use this model as the explicative principle of nature as a whole, he did not apply it to various extremely important fields, among these the field of logic; and even in the field of natural reality his desire was to stick as closely as possible to the variety and complexity of phenomena. Hegel, on the other hand, makes more definite use of the theologico-metaphysical matrix in as much as he applies the biological model of generation to all fields of reality, whether natural or spiritual, without exception.

As for the effectiveness of a logico-deductive matrix in the Hegelian doctrine of dialectic, it should be remembered that Hegel himself made a definite distinction between formal logic derived from Aristotle and concrete logic, which he proposes to follow; there can be no doubt that Hegel identified necessity precisely with the development of concrete reality; in other words it is reality itself, in its effective development, that moves with the rhythm of antecedent and consequent, thus given a particular antecedent the consequent cannot but derive from it; true necessity is not given by just any abstract concatenation, but by the same structure of the process that governs the evolution of all things. It is, however, possible to speak of a logico-deductive matrix for Hegelian doctrine since it is from logical deduction and from deductive implication that Hegel derives his idea of necessity; it may easily be true that this is not the only origin of his concept of necessity; he may have drawn the function of necessity from the same origin attributed, in theologico-meta-

physical thought, to a divine principle, whose will crushes the autonomy of all beings; however the most human form of necessity, the one to which is given the least metaphysical shape, is undoubtedly logico-deductive. Essentially Hegel underrates it simply because he regards it purely as a concatenation of words and in as much as he believes that the whole energy of the process of deductive concatenation is directly transferred to the real process; therefore it is precisely because we possess, in the very structure of reality, a case of concatenation both real and necessary, that we cannot attribute a predominant importance to purely formal concatenation; whereas it is from an understanding of purely formal concatenation that derives, at least in part, its separation from the bosom of reality; furthermore one should attribute, at least in part, to this same logico-deductive matrix the meaning of the negation that supplants what has been negated, and also the meaning of the positive elements of the negation, in so far as the logical function of negating must refer to something which possesses its own positive data, independent of the negation.

One may conclude that Hegelian dialectic, from the point of view of its historical formation, involves the use of a model of genetical-biological kind, which draws partly on common observation and partly on theoretical reasoning, with a metaphysical perspective that raises its role to that of an explicative criterion for the whole of reality, and enriched by the necessity of the logico-deductive process made concrete and material.

3. Now this amalgam is in sharp contrast with the epistemological and gnoseological criteria which are given shape by modern culture, and the development of philosophical thought seems to be turning towards these, even after the affirmation of Hegelian doctrine. Not that logical, epistemological and gnoseological thought originated with the modern era; but within its sphere the substantial distinction between two types of cognitive procedure and the two corresponding forms of truth has been clearly defined, carefully worked out and prepared over the years. This distinction is limpidly explained by Hume:

All the objects of human reason or enquiry may naturally be divided into two kinds, to wit, Relations of Ideas, and Matters of Fact. Of the first kind are the sciences of Geometry, Algebra and Arithmetic;

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and in short, every affirmation which is either intuitively or demonstratively certain. That the square of the hypotenuse is equal to the square of the two sides, is a proposition which expresses a relation between these figures... Matters of fact, which are the second objects of human reason, are not ascertained in the same manner; nor is our evidence of their truth, however great, of a like nature with the foregoing. The contrary of every matter of fact is still possible; because it can never imply a contradiction, and is conceived by the mind with the same facility and distinctness, as if ever so conformable to reality. That the sun will not rise tomorrow is no less intelligible a proposition, and implies no more contradiction than the affirmation, that it will rise. We should in vain, therefore, attempt to demonstrate its falsehood. Were it demonstratively false, it would imply a contradiction, and could never be conceived by the mind (*An Enquiry concerning the Human Understanding*, IV).

It is one thing, according to Hume, that our knowledge should proceed “by the mere operation of thought” without reference to any existant thing, quite another that it should refer to “matter of fact,” that is to something which exists. Hume merely points out that, in the first case, we have propositions in which ideas are confronted, whose relation is grasped either in immediate or mediate form; in both cases, however, once the first idea is conceived, we cannot conceive distinctly of the contrary to the second, which is part of the first; and it is inability which demonstrates that the second idea is “determined,” whether it is a question of “evidence” as when the relation is grasped directly, or a question of “demonstration” as when the relation is grasped in mediate form. Hume does not explain the nature of the possibility or impossibility of our understanding the contrary of an idea more fully; but he considers that they are characteristic of two different types of reasoning, of which only the first may be called demonstrative (in that it is founded on the impossibility of conceiving its contrary), while the second must be called probable (in that it is founded on the possibility of conceiving its contrary). It follows that demonstration and the intuition of evidence are possible only in the case of ideas of the mind, whereas knowledge of fact can never be submitted to the same rigor and an analogous necessity; rigorous demonstration is possible only in mathematics, whereas in all the other sciences

of nature, as in the science of human behavior, only a greater or lesser degree of probability may be achieved. Above all Hume condemns any attempt to extend the methods of demonstration belonging to the mathematical sciences to the field of matter of fact:

It seems to me, that the only objects of the abstract science or of demonstration are quantity and number, and that all attempts to extend this more perfect species of knowledge beyond these bounds are merely sophistry and illusion (*An Enquiry concerning the Human Understanding*, XII).

Only in the field of mathematics, can the process of deduction make us discover effective demonstrations; when applied to matter of fact it can, at best, help us to formulate definitions, but never to discover truths. He clinches his argument by saying:

All other enquiries of men regard only matter of fact and existence; and these are evidently incapable of demonstration. Whatever is may not be. No negation of a fact can involve a contradiction. The non-existence of any being, without exception, is as clear and distinct an idea as its existence. The proposition, which affirms it not to be, however false, is no less conceivable and intelligible, than that which affirms it to be. The case is different with the sciences, properly so called. Every proposition, which is not true, is there confused and unintelligible... The existence, therefore, of any being can only be proved by arguments from its cause or its effect; and these arguments are founded entirely on experience (*An Enquiry concerning the Human Understanding*, XII).

In the light of this analysis of human knowledge, Hegelian dialectic is shown to be an unacceptable hybrid, which hopes to achieve a necessary understanding of concrete reality, whereas this, in Hume's view, is a species of square circle; this is all the more true if one reflects that the biologic-evolutionary model, on which the formulation of the dialectic is based, is itself a factual schema, to which Hegel hoped to attribute values at once metaphysical and necessary. It is true that Hegel thought it possible to overcome every difficulty of the kind proposed by Hume attributing the distinction between deductive and demonstrative knowledge, on the one hand, and factual knowledge, on

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the other, only to the sphere of scientific research into the finite, whereas he believed that philosophy has a claim to a superior kind of knowledge, capable of achieving that a priori synthesis Kant had tried to restore; however it was Hume's intention to circumscribe philosophical knowledge, as well, in the sphere of the two forms of knowledge he had theorized; philosophical reasoning has recently taken upon itself the same task, with a desire to preserve a rigorously cognitive character for itself and therefore to make a thorough critical examination of any procedure that is not a positive element in the structure of science. If we consider the most recent developments of epistemological and gnoseological analysis, we are in fact confronted by a substantial corroboration of Hume's theory.

4. The distinction between empirical and abstract sciences or, as they are called, between real and formal sciences, is a commonplace in current epistemology; the former are made up of synthetical propositions, that is propositions that bind diverse facts together, and that use empirical processes; these cannot establish their own results without referring to experience; on the contrary formal or abstract sciences are composed of analytical propositions, that is propositions which, according to Carnap, are true in all possible worlds, and can be verified on the basis of mere form or mere meaning, quite independently of the study of facts; the sole processes used by these sciences are postulate and deduction, and these achieve their own results without calling for the help of experience; they are sciences "based substantially on conventions of a linguistico-conceptual nature and as a matter of principle they are in no way required to conform fully to certain spheres of empirical phenomena" (Alberto Pasquini, *Nuovi principii di epistemologia*, Milan, 1964, p. 60); for this very reason they are unable to give us concrete knowledge of physical, biological, psychical, historical or social events, in their connexions and justifications. Basically formal science can at most be used to give knowledge of "ideal possibilities," let alone their connexions and consequences. Of these one can say, in the words of Einstein when he was writing about the laws of mathematics, that "in as much as they refer to reality, they carry no certitude and in as much as they

are certain, they do not refer to reality." There is undoubtedly some connexion between abstract science and real science; this consists principally in that abstract or formal science may be of use as an "explanation of the general conditions of concrete knowledge," in as much as "the realm of possibility also includes the realm of reality"; and also because they act as "the instruments of order, rigor and justification that may be applied within the ambit of empirical research to establish the cognition which is being pursued" (A. Pasquinelli, *op. cit.*, p. 61); but the use that can be made of inference within the ambit of real or empirical sciences, even though it is controlled by corresponding formal or abstract sciences, cannot offer any justification for the particular factual content of this same inference. Thus the essential difference between the two groups of science and their respective processes remains the same; and thus the possibility of synthetic a priori knowledge is excluded, that is knowledge with a content of fact and at the same time endowed with a character of necessity, proper to the deductive process; slowly the certainty has grown that, notwithstanding their important role in the realm of knowledge, formal or abstract sciences "play, within the general sphere of cognitive activity, only a limited and auxiliary role;" and that, however, they can never cover in a direct and complete way the field of empirical sciences. The diversity which Hume pointed to remains unaltered and leads to fundamental difficulties with regard to Hegelian dialectic and to dialectic in general. Great strides have been made, compared to the level reached by Hume's analysis, by epistemological research in both abstract and real science; the respective sciences of logic and induction have been examined more thoroughly and the relative research has evolved along very lively and richly progressive lines.

In the enquiry concerning purely abstract and formal knowledge, the field of formal science has been enlarged to include not only mathematics but also logic; along these lines it has been concluded that the very fundamentals of mathematics may be reduced to logic; Logic has assumed once more the importance it had, at the time of Aristotle and of Leibnitz, and the necessity to distinguish between logic and gnoseology, which even Hume had understood, has been asserted. But at the same time, both logic and mathematics have continued to lose the attributes of

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disciplines capable of reflecting the most basic structures of reality; in this way the connexion and correspondence between the structures of the real world and the structures of formal science have gradually been shaken and then completely broken down. On this very connexion depended the conviction that it was possible, with the help of logic and mathematics, to intimate the structure of the world, because the facts of the world could, in this context, be the objects of rigorously necessary demonstration. Of this Cartesius had been utterly convinced; and although he clearly asserted the autonomy of logic, Leibnitz considered this however as destined through different mediations, to tie up with the ordering of the cosmos. Hume retains only the conviction that the necessary and non-contradictory character of mathematical knowledge is tied to our inability to conceive the contrary of what is affirmed by its propositions. Today the purely "constructed" character of formal science, or rather its complete independence from any factual consideration, is widely emphasized. The experts who reduce both mathematics and logic to the restricted role of primitive mental structures, do not consider these at all capable of giving factual or concrete knowledge. Russell has pointed out that it is not enough to "define logical propositions as the propositions derived from the laws of contradiction," when the law of tautology is their most individual characteristic. It is obvious however that not all the residues of Platonism underlying research in logic have been eliminated by modern reasoning; but great strides have been made by the analytico-linguistic perspective that interprets logic, in the words of Church, "as the systematic study of enunciative structures and of the general conditions of validity of inference, by means of a process that considers opinions quite apart from their content and subject matter and only deals with their form." One should however point out that those views of logic based even today on realistic rather than analytico-linguistic foundations, have formed the hypothesis, corresponding to the structures of logic, of a series of bodies entirely separate and different from factual ones; in this case too the absolute impossibility of achieving a formal and deductive knowledge of the world of fact is once again confirmed. It might be objected that whenever tautological modellers are used to lay the formal foundations for a universal

field of discussion and to limit the respective structures, facts of a logical order must to some extent be assumed, conferring on these the character of necessity. But the assumption of facts in words can have no quality of necessity; this is merely a conventional operation and may be considered to be motivated by the same freedom that presides over the assumption of axioms; moreover the tautological character of the proposition or definition in which the fact is assumed, transforms this fact into an abstract structure that may serve as point of departure for a formal system; for all this the fact is not endowed with a more-than-factual importance; it merely suggests an abstract structure; but this abstract structure does not have its "foundation" in fact, nor does the fact have its necessary consecration in the abstract structure. Necessity intervenes, so to speak, not in the bosom of the tautological modeller, but in all the consequences that may be derived from it and is without doubt founded on implication and deduction; or, if you like, necessity is introduced into the bosom of the same tautological modeller by tautology, and is none other than the necessity we feel when, after having assumed an idea, we cannot reject it without contradicting ourselves.

The most recent enquiries into induction and factual scientific knowledge have certainly modified certain aspects of Hume's corresponding doctrine, but they confirm most emphatically the basic difference between deduction and induction, and the typical non-deductive character of real and empirical science. Above all deduction is shown not to be the only kind of scientific knowledge:

Deductive reasoning is not the only kind of reasoning, or even the most common kind... Thus the detective and the historian, when they draw conclusions from their premises, their evidence, often draw conclusions which are not entailed by those premises. There would often be nothing self-contradictory in accepting these premises, and rejecting the conclusions, of these arguments. But it does not follow from the fact that an historians's or a detective's argument is, by deductive standards, invalid, that it is in any sense unsound. It may be one argument to which deductive standards are inappropriate: it may make no claim to be deductively valid. Deductive standards are not the only standards for sound argument, since deductive reasoning is not the only kind of reasoning. (P. F. Strawson, *Introduction to Logical Theory*, Methuen, London 1952, ch. ix, I, 1).

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However the validity of that particular form of inference that moves from a non-necessary assertion and links it with another, although the former (in a strictly logical sense) does not require the latter, is recognized; even if this may not be called deductively valid, it may be called “sound, correct or reasonable;” and if in deductive inference a relation of implication is asserted, inductive reasoning contains proofs that support the conclusion. The difference between deduction and induction is thus examined by Strawson:

The premises of a deductive argument either entail the conclusion or they do not. They cannot entail it more or less; there can be no question of *degrees* of entailment. But there can be, and is, a question of degrees of support; there can be, and is, better or worse evidence for inductive conclusions. (*Op. cit.*, ch. IX, I, 2).

The distinction between deduction and induction is so clear and precise that modern studies lay the emphasis principally on the error derived from believing that induction and deduction are in competition with one another in the same sphere; they insist on denying any privilege to deduction and fight the unconscious tendency to see induction in function of deduction and to subordinate it. It is Strawson who insists more than anyone else on the assertion that the series of degrees of proof that may be achieved in induction should not be considered imperfect compared with the perfection that is achieved by deductive implication. An evaluation of induction should rather be based on the conclusive evidence it is able to reach. Essentially this means that the question of the justification of induction should not require, even implicitly, that induction be proved to be in reality a species of deduction. Such an energetic defense of the autonomy of the inductive process is coupled however with a further inquiry into its limitations and their determination. Along these lines, induction has been understood as a kind of reasoning whose task it is to determine the degree of corroboration that is assured to a proposition by the available elements of proof; and this degree may be formulated in numerical values, or rather the degree of corroboration or guarantee of truth of the probabilistic assertions, on the basis of definite elements of proof, is represented by the numerical value of the probabilities that may

be determined by these. Therefore all laws established inductively have a statistical value, that each time may be defined in numerical form. This also means that laws set down inductively are always in relation to a finite number of cases and cannot refer to a totality which is never given statistically.

5. To go back to dialectic, it is not difficult to understand that the difficulties contained in this doctrine may be challenged from the point of view of contemporary logic, epistemology and gnoseology. From the point of view of induction and the empirical sciences, those aspects of dialectic doctrine that, notwithstanding everything, tie it to a body of facts of which it is the generalization, may gain in importance; we have already referred to a biologicoevolutionary matrix for this doctrine, both with regard to the father-son son-father relationship, and with reference to the 'biological development of an individual being the dialectic doctrine can present a general formulation of such factual connexions; but in this case the validity of the formulation does not go beyond the factual limits to which it refers directly; it is now a case of considering the usefulness its models have in the development of research and in what form they really adhere to the process they wish to explain. One could also put forward the hypothesis of extending the genetical-evolutionary model to explain other spheres of experience; but this should be done after taking all the precautions that are necessary in these transformations and in the determination of the degree of analogy they can bear. Whatever the limit to be set for dialectic doctrine from a point of view of its inductive foundations, in order to define its empirical ambit, it can certainly have no value as a metaphysical criterion for the comprehension of reality as a whole; in fact the whole of reality, which metaphysical law (by definition) aims at describing, is excluded on principle from the sphere of inductive knowledge and its various degrees. If the dialectic doctrine is founded on inductive reasoning and statistics, it should certainly renounce its metaphysical character and its pretensions to being valid for the whole of reality; but we have seen that this is certainly one of the essential characteristics of dialectic doctrine, and to renounce this means to remove one of its essential assumptions. Nor, on the other hand, if it is founded on inductive

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reasoning, can dialectic doctrine preserve its character of necessity; at least that is if it means by necessity either the characteristic of the deductive relation of implication or the theologico-metaphysical character, which would mean one would not know how to give shape to the possibility of a factual and empirical pendant. One may say then that Hegelian dialectic doctrine, if reduced to the role of a purely inductive law founded on statistics, would lose the very substance of those characteristics its author used in its construction.

Nor is the result different if we start from the point of view of logic and formal and abstract science; in this case a necessity typical of implication is assured to the deductive process, but it is closely connected to the analytical and tautological character of the process. Now dialectic doctrine cannot be translated into a tautological definition or a tautological modeller, because of the exquisitely synthetical nature so characteristic to it. This synthetic character is clearly apparent in so far as the dialectic doctrine presumes to be valid in the real connexions of things and facts and rejects the possibility of being understood as a merely abstract formula without any factual importance; this same abstract formula of the doctrine comprises the formal union of different and distinct moments and the passage from one to another of these. The necessity of implication does not allow for the union of two different ideas, two different moments, two different realities; for this kind of link one can resort only to induction. Nor can the relation of negation and affirmation, which Hegel uses in dialectic doctrine, be rigorously related to the development negation and position have in deductive implication; in fact these are internal functions of tautology and deduction, whereas Hegel really uses them in the connexions between ideas and distinct and diverse moments.

Important contemporary schools of thought assert that they can assimilate Kant's transcendental method, that is the enquiry into the conditions of the possibility of experience, to purely philosophical research; this implies the legitimacy of a transcendental logic, not to be identified with formal or abstract logic. But even transcendental logic, thus reappraised, cannot avoid using those general facts asserted by formal logic; therein lies the most important modification assumed by modern transcendental logic.

In this last the *a priori* takes on a character of necessity, whose origin, at least in part, is metaphysical; this is seen to be all the more true when one considers those developments idealism is supposed to have inherited from Kant, passing from Kant's transcendental logic to an absolut logic of concrete reality. Current philosophical thought cannot observe all the limiting aspects of the *a priori* present in transcendental analysis, and consequently all the limits of its necessity; the use of tautological modellers is also tied up with a picture of a transcendental logic, in which however the categories have the logical meaning of axioms and postulates, and in which necessity assumes the characteristic of tautology. Hence the particular character assumed by the new *a priori* synthesis which is applied in the renewed use of transcendental inquiry; rather than whelding reason and reality into one whole, it appears to be the logically correct elaboration of the meanings that make the various forms of experience possible and that possess a structure as varied and complex as human experience itself; in this case the union or synthesis of these transcendental conditions with empirical material no longer achieves a metaphysical union of reason and reality, but merely expresses an historically determinate and finite phase in this same transcendental enquiry. Nor could this be considered correct if it were to assume only that which factual observation may offer as real and specific in formal structures. The new *a priori* synthesis (if one wishes to use the expression) unites formal analysis with the elaboration of empirical data, but it maintains the duality of the respective spheres and methods of knowledge; in other words it comes closer to the perspective formulated by Hume on the distinction between the knowledge of relations between ideas and the knowledge of matter of fact, than to the Hegelian metaphysical synthesis of logic and reality.